(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 30 October 2003 (30.10.2003)

PCT

(10) International Publication Number **WO 03/090439 A2**

(51) International Patent Classification7:

- (21) International Application Number: PCT/US03/10888
- 9 April 2003 (09.04.2003) (22) International Filing Date:
- (25) Filing Language:

English

H04N

(26) Publication Language:

English

(30) Priority Data:

60/373,008

US 16 April 2002 (16.04.2002)

- (71) Applicant (for all designated States except US): THOM-SON LICENSING S.A. [FR/FR]; 46, Quai A. Le Gallo, F-92648 Boulogne (FR).
- (71) Applicant and
- (72) Inventor: HEO, Seo, Weon [KR/KR]; 127-18 Gaebongbon-Dong, Guro-Gu, 152-090 South Korea (KR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): PARK, Jeongsoon [KR/US]; 738 Young Graduate House, West Lafayette, IN 47906 (US). GELFAND, Saul, Brian [US/US]; 70 Sugar Maple Court, Lafayette, IN 47905 (US). MARKMAN, Ivonete [BR/US]; 11388 Royal Court, Carmel, IN 46032 (US).

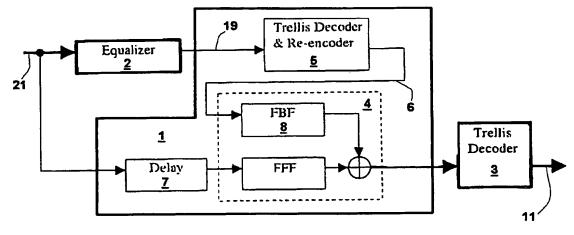
- (74) Agents: TRIPOLI, Joseph, S. et al.; c/o Thomson Licensing Inc., 2 Independence Way - Suite 2, Princeton, NJ 08540 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CONCATENATED EQUALIZER/TRELLIS DECODER ARCHITECTURE FOR AN HDTV RECEIVER



(57) Abstract: A concatenated equalizer/trellis decoding system for use in processing a High Definition Television signal. The re-encoded trellis decoder output (6), rather than the equalizer output (19), is used as an input to the feedback filter (8) of the decision feedback equalizer (4). Hard or soft decision trellis decoding may be applied. In order to account for the latency associated with trellis decoding and the presence of twelve interleaved decoders, feedback from the trellis decoder to the equalizer is performed by replicating the trellis decoder and equalizer hardware in a module (1) that can be cascaded in as many stages as needed to achieve the desired balance between complexity and performance. The present system offers an improvement of between 0.6 and 1.9 decibels. Cascading of two modules (1) is usually sufficient to achieve most of the potential performance improvement.

